

REMARKS

Introductory comments

This Amendment is submitted in response to the January 22, 2004 Office Action issued in connection with the above-identified patent application. Claims 1, 2, 6, 14, 17 and 19 have been amended as shown above, and claims 21-23 have been added. Upon entry of this Amendment, the pending claims will be currently amended independent apparatus claim 1, with claims 2-18, 21 and 22 depending therefrom, and currently amended independent method claim 19, with claims 20 and 22 depending therefrom. No new matter has been added. It is respectfully requested that the Examiner review and consider the foregoing claim amendments in view of the following remarks.

Brief discussion of specific embodiment(s) of the invention

Fig. 1 is referred to herein exclusively for its showing of an exemplary embodiment as a matter of convenience in assisting the Examiner as part of this brief discussion, but it is not to be understood as in any way limiting the scope of the claims. The subject invention is directed to an apparatus and method for producing a tire reinforcement from a single "thread" of material by using an oscillating arm system having at least a first arm (such as 31^{1a}, 32^{1a}) that oscillates about a geometrical axis of rotation 31R^{1a}. The oscillating arm system causes movement of a thread guiding member, having an orifice 6^{1a} for dispensing the thread, to pass over, but without substantially contacting, the "form" (such as tire core 1¹) in order to apply the thread to the form. The movement of the oscillating arm causes the thread guiding member, which includes orifice 6^{1a}, to move toward, and away from, the geometrical axis of rotation 31R^{1a}, as illustrated, for example, in the right-hand-side of Fig. 4.

Some of the features recited in claim 1 are listed below so they can be conveniently referred to in the ensuing discussion.

1. The oscillating arm system causes movement of the guiding member such that it passes over, but without substantially contacting, the form.
2. The oscillating arm oscillates about a first geometrical axis of rotation and is oriented substantially perpendicular thereto.
3. The movement of the guiding member is substantially contained in a movement plane which is substantially perpendicular to the first geometric axis of rotation.
4. The invention varies a radial distance, in the movement plane, between the guiding member and the first geometrical axis of rotation during movement of the guiding member.

Rejection under 35 USC 112 has been overcome

Turning now to the Office Action, claims 1-20 have been rejected as indefinite under 35 U.S.C. §112, second paragraph. Specifically, the Examiner advised that it is unclear which of the disclosed embodiments are intended to be covered by claim 1 because the "means for varying the radial distance between the head and the first geometrical axis of rotation" appears to read only on the embodiment depicted in Fig. 11. In response, claim 1 has been amended to specify that the distance being varied is between the thread guiding member and the first geometrical axis of rotation. Also, claim 1 included the limitation of "at least one arm", which is arguably inconsistent with claim 2. This limitation in claim 1 has now been amended to "at least a first arm". This latter amendment to claim 1 now also provides a proper antecedent basis for "the first arm" in claim 2. Lastly, the dependency of claim 14 has been changed from "claim 1" to "claim 2" to provide a

proper antecedent basis for "the second geometric axis of rotation". As a result of these claim amendments, it is respectfully submitted that the rejections under 35 U.S.C. §112, second paragraph, have been overcome.

Claimed invention is allowable over prior art

Turning now to the merits, claims 1 and 18-20 stand rejected under 35 U.S.C. §102(e) as anticipated by U.S. Patent No. 6,623,582 (Ogawa) (hereinafter "Ogawa '582"). Claims 1-4, 7, 13 and 18-20 stand rejected under 35 U.S.C. §103(a) as obvious over Ogawa '582 in view of U.S. Patent No. 5,159,249 (Megherbi). Claims 1, 16, 18-20 stand rejected under 35 U.S.C. §102(e) as anticipated by U.S. Patent No. 6,328,836 (Ogawa) (hereinafter "Ogawa '836"). For the following reasons, applicant respectfully requests reconsideration and withdrawal of these rejections.

Ogawa '582 discloses an apparatus for producing a tire core 2 using a pair of feed mechanisms 3a, 3b as shown in FIG. 1, to apply a cord 7 (i.e. a "thread") to the core. As shown in FIG. 1, the cord 7 is applied to the core along a 3-dimensional path of the outer surface region 9 which encompasses the sides of the core as well as the outer surface designated by reference 10. To traverse this path, the feed mechanisms are disclosed to be three-axes actuators, such as commercially available industrial robots, which allow the outlet guide 8 to be moved along the outer surface of the core. See Ogawa '582 Col. 4, lines 15-19. The geometric axis of rotation of the robot to place the thread on the core is vertical. Likewise, the movement plane of outlet guide 8 in this reference is vertical and it lies parallel to the geometric axis of rotation, as clearly shown in Fig. 1. Thus, at least above-listed feature no. 2 of the present invention is not met because the motion of the feed mechanisms 3a, 3b of Ogawa '582 is not "substantially contained in a movement plane that is substantially perpendicular to said first geometric axis of rotation" as is now recited in

amended claims 1 and 19. For at least this reason, amended claims 1 and 19 are clearly not anticipated by Ogawa '582.

In addition, the above-discussed distinctions are not taught or suggested by Ogawa '582 applied alone or in combination with any of the other cited references. Therefore, the independent claims 1 and 19 are also unobvious over Ogawa '582 under 35 U.S.C. §103.

In rejecting claims 1-4, 7, 13 and 18-20 as being obvious over Ogawa '582 in view of Megherbi, the Examiner relies on Megherbi for teaching that "well known industrial robots are configured with arms controllably rotatable about axes of rotation ...". Office Action, P. 5 lines 8-10. However, Megherbi fails to bridge the above-discussed gap between the present claimed invention and Ogawa '582. Accordingly, claims 1 and 19 are not rendered obvious from the combination of Ogawa '582 and Megherbi.

Turning now to the Examiner's rejection of claims 1, 16, 18-20 as being anticipated by Ogawa '836. Figs. 1-3 of this reference depict one embodiment having a non-contact feed mechanism for applying a cord from a cord passage 21 to a core 1. This embodiment shown maintains a constant distance between cord passage 21 and the axis of rotation. This is clearly shown in Fig. 3. The same conclusion applies to the embodiment shown in Figs. 4a and 4b of this reference. Thus, these embodiments do not include at least above-discussed feature 4 of the present invention.

The embodiment shown in Figs. 5-7 of this reference is different in several ways from the first two embodiments. Firstly, rollers 49 with cord passage 37 therebetween are in contact with the peripheral surface of core 1. See col. 8, lines 2-4 of this reference. Secondly, Ogawa '836 shows rollers 49 to be at one end of an oscillating arm 35. At the other end of the oscillating arm 35 is spherical bearing 33. Rotation of yoke 41 by motor 3, via gears 15 and 19, causes rotation of arm

35 in bearing 33 around an axis of rotation extending from bearing 33, as perhaps best understood from Fig. 6.

Such an arrangement fails to anticipate at least above-listed features 1 and 3. More specifically, the guiding member of this reference is in contact with core 1. In addition, arm 35 is clearly not oriented substantially perpendicular to the axis of rotation. On the contrary, arm 35 is substantially parallel thereto. For at least these reasons, claims 1, 16 and 18-20 clearly are not anticipated by Ogawa '836.

In addition, the above-discussed distinctions are not taught or suggested by Ogawa '836 applied alone or in combination with any of the other cited references. Therefore, the independent claims 1 and 19 are also unobvious over Ogawa '836 under 35 U.S.C. §103.

Inasmuch as amended independent claims 1 and 19 are believed to be patentable over the cited references for the reasons set forth above, dependent claims 2-18 and 20-23 are also believed to be patentable for at least the same reasons.

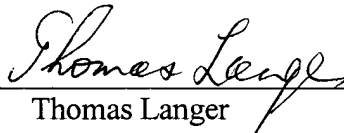
Based on all of the above, it is respectfully submitted that the present application is now in proper condition for allowance. Prompt and favorable action to this effect and early passing of this application to issue are respectfully solicited.

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Should the Examiner have any comments, suggestions, questions or objections, the Examiner is respectfully requested to telephone the undersigned in order to facilitate a resolution of any such matters.

Respectfully submitted,

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